

SOVIET AEROSPACE ALMANAC

Information for this Almanac was compiled by the staff of AIR FORCE Magazine from a variety of open sources. Since the Soviets publish relatively little data about their armed forces, some details are necessarily estimates.

We especially acknowledge the

assistance of the US Air Force's Directorate of Soviet Affairs, Bolling AFB, D. C., for their advice and counsel on this project. We would also like to thank William and Harriet Fast Scott for their review of this material.

—THE EDITORS



Pin commemorating the fiftieth anniversary of the establishment of the Union of Soviet Socialist Republics

Significant Dates in Soviet Military History

- 1917—February Revolution. Nicholas II abdicates (March 15). October Revolution. Bolsheviks seize power (November 7–8).
- 1918—Treaty of Brest-Litovsk ends Russia's participation in World War I (March 3). Russian Civil War begins. Fighting lasts until 1920 in western regions of the country and until 1922 in far eastern regions.
- 1921—Russo-Polish War. A naval mutiny at Kronshtadt/Petrograd is put down by the Red Army (March 7–18).
- 1922—Union of Soviet Socialist Republics is established (December 30).
- 1936—The Soviets aid the Republicans during the Spanish Civil War (through 1939).
- 1937—Stalin initiates his Great Purges of the Soviet military. The purges continue through 1938.
- 1939—Soviet forces battle Japanese forces at Khalkhin Gol in Outer Mongolia (May–August). The Soviets sign a non-aggression pact with Nazi Germany (August 23). Hitler's invasion of Poland begins World War II (September 1). The Soviets join the Germans in the invasion of Poland (September 17). War breaks out between the Soviet Union and Finland on November 30 and lasts into March 1940.
- 1940—The independent Baltic republics of Lithuania, Latvia, and Estonia are occupied by the Soviets and incorporated into the USSR (July–August).
- 1941—The Soviets and Japanese conclude a treaty of neutrality (April 13). Germany invades the Soviet Union (June 22). German forces push to the gates of Moscow, but are turned back by the Soviets (September 30–December 5). The US approves Lend-Lease to the USSR (November).
- 1942—The Battle of Stalingrad is fought (August to February 1943).
- 1943—The Battle of Kursk is fought (July 5–July 16).
- 1945—Berlin falls to Soviet troops (May 2). Germany surrenders to the Allies (May 8). The Soviet Union declares war on Japan (August 8). Japan surrenders to the Allies (September 2).
- 1948—The Soviets begin the Berlin Blockade (April 1 through September 1949).
- 1949—The Soviets explode an atomic bomb (August 29).
- 1953—The Soviets explode a hydrogen bomb (August 12).
- 1955—The Warsaw Pact organization is established (May 14).
- 1956—Soviet forces crush the Hungarian uprising (November 4).
- 1957—The USSR announces its first successful ICBM test (August 26). The first Sputnik satellite is launched by the Soviets (October 4).
- 1960—An American U-2 is shot down over the USSR (May 1). A rift begins to develop between the USSR and the People's Republic of China (approximate).
- 1961—The Soviets begin construction of the Berlin Wall (August 13).
- 1962—The Cuban Missile Crisis occurs (October 22–November 2).
- 1968—Soviet forces invade Czechoslovakia (August 20–21).
- 1969—The USSR clashes with China along the Sino-Soviet border.
- 1972—The US and the USSR sign the SALT I accord (May 22).
- 1979—The US and the USSR initial the SALT II accord (June 18). The Soviets invade Afghanistan (December 25).
- 1983—Soviet fighters down KAL 007, a civilian South Korean airliner that had inadvertently strayed into Soviet airspace (September 1).

Soviet Znachkii

Soviet *znachkii* are small plastic or light metal badges that commemorate noteworthy events, people, locations, and achievements. Costing on the average anywhere from five kopeks to fifty kopeks (seven cents to seventy cents), they feature clasps that allow them to be worn on clothing.

Soviet youngsters frequently trade *znachkii* among themselves and to Western tourists for such items as chewing gum and ballpoint pens. Examples of *znachkii* are pictured throughout this "Soviet Aerospace Almanac" section.

Top Soviet Aces of World War II

Men	Solo Victories
Kozhedub, I. N.	62
Pokryshkin, A. I.	59
Gulaev, N. D.	57
Rechkalov, G. A.	56
Yevstigneyev, K. A.	56
Vorozheykin, A. V.	52
Glinka, D. B.	50
Women	
Yamschikova, O.	17
Lityak, L.	12
Budanova, K.	10

More than 800 Soviet aviators claimed sixteen or more victories in the "Great Patriotic War." Many of these—including Gulaev, Rechkalov, and Yevstigneyev—are additionally credited with shared victories in "group flights."

Flags of the Armed Forces



The Ground Forces
Sukhoputnyye Voyska (SV)



The Air Forces
Voyenno-Vozdushnyye Sily (VVS)



The Navy
Voyenno-Morskoy Flot (VMF)



Strategic Rocket Forces pin

Official and Military Holidays

Official Holidays of the USSR

(Workers are given time off on these days.)

January 1	New Year's Day
March 8	International Women's Day
May 1 & 2	International Workers' Solidarity Days
May 9	Victory Day
October 7	Constitution Day of the USSR
November 7 & 8	Anniversary of the Great October Socialist Revolution

Key Military Days of the USSR

(Time off from work is not normally given, but celebrations are held.)

February 23	Soviet Army and Navy Day
April 12	World Aviation and Cosmonautics Day
Second Sunday of April	Troops of Air Defense Day
May 28	Border Troops Day
First Sunday after July 22	Navy Day
Third Sunday of August	USSR Air Force Day (Aviation Day)
Second Sunday of September	Tank Forces Day
November 10	Soviet Militia Day
November 19	Rocket and Artillery Forces Day

The Military Uniform

Soviet uniforms can vary widely, depending on the rank, service, and position of the wearer as well as the season, occasion, and environment. The following distinctions are applicable to a Soviet equivalent of a USAF officer's Class-A uniform.

- The color of the collar tabs indicates the branch of service. The hatband of the billed cap will be the same color as the collar tabs. Some examples: light blue = aviation and airborne; red = combined arms; black = rocket, artillery, armor, and most technical (chemical, etc.) troops; royal blue = KGB (except Border Guards); and green = KGB Border Guards.

- The branch emblem on the tab indicates the individual's specialty. Some examples: propeller and wings = aviation, parachute = airborne, wreath and star = motorized rifle, crossed barrels = rocket and artillery, and tank = armor.

- Shoulder boards indicate grade (see accompanying chart).

- The right side of the blouse will display qualifications and classification badges, including aviator wings and elite unit designations.

A Typical Day for a Soviet Conscript

0600-0609	Reveille
0610-0630	Exercise (tidying up)
0630-0650	Barracks time
0650-0720	Political information (morning inspection)
0725-0755	Breakfast
0800-1400	Training periods (six fifty-minute periods with ten-minute breaks between)
1400-1440	Dinner
1440-1510	After dinner time
1510-1530	Maintenance: personal, weapon, and equipment
1530-1830	Political education work (Monday and Thursday) Equipment maintenance (Tuesday and Friday) Sports (Wednesday and Saturday)
1830-1940	Self-preparation or homework
1940-2010	Supper
2010-2040	Personal time
2040-2155	Evening walk and checkup
2200	Taps

Comparative Grades and Insignia

(Bold face indicates equivalent USAF rank.)



Glavnyi Marshal Aviatsii
General of the Air Force



Marshal Aviatsii
General



General-Polkovnik Aviatsii
Lieutenant General



General-Leytenant Aviatsii
Major General



General-Mayor Aviatsii
Brigadier General



Polkovnik
Colonel



Podpolkovnik
Lieutenant Colonel



Mayor
Major



Kapitan
Captain



Starshiy Leytenant
1st Lieutenant



Leytenant
2d Lieutenant



Mladshiy Leytenant
2d Lieutenant



Starshiy Praporshchik
Senior Warrant Officer



Praporshchik
Warrant Officer



Starshina
Chief Master Sergeant



Starshiy Serzhant
Senior Master Sergeant



Serzhant
Master Sergeant



Mladshiy Serzhant
Staff Sergeant



Efreytor
Airman First Class



Ryadovoy
Airman Basic

Soviet Theater Estimates

COMBAT ORGANIZATION (As of October 1, 1986)

Normal peacetime command and control of Soviet combat forces (excepting strategic elements, some air defense assets, and KGB and MVD units) is primarily exercised through the Commanders of the sixteen Military Districts, the four Naval Fleets within the country, and the four Groups of Soviet Forces in eastern Europe. District commanders are responsible for the training and house-keeping of the diverse forces in their geographic area; individual services handle administrative support.

In wartime, operational control would shift to Theaters of Military Operations (TVD—*Teatr Voennykh Deystviy*), which could include several "fronts." In some instances, district commanders would become the TVD commanders. Fifteen TVDs have been tentatively identified. Some of these may be grouped into continental Theaters of War (TV—*Teatr Voyny*). While the Far Eastern and Southern TVs probably correspond to their TVDs, the Western TV most likely includes the Northwestern, Western, and Southwestern TVDs.

Commanders of TVDs and TVs are combined-arms commanders, directing all operations in their areas during conflict and reporting directly to the Soviet Supreme High Command. The Soviets consider the Western TV the most important, and its commander holds a position of special responsibility—perhaps extending to control of all Warsaw Pact forces in wartime.

The Soviets have never published specific information on TVs or TVDs.



FAR EAST THEATER

Far East TVD

Divisions	54
Tanks ⁴	14,985
Artillery ²	13,420
Tactical Aircraft	1,720

Pacific Ocean TVD

Pacific Ocean Fleet

Aircraft Carriers	2
Principal Surface Combatants	84
Other Combatant Craft	395
Auxiliaries	240
Submarines ³	90
Naval Aviation	515
Naval Infantry Division	1

Indian Ocean Squadron

(most units drawn from Pacific Ocean Fleet)

Ships, average	15–25
Submarines	1–2
Principal Surface Combatants	2–3
Amphibious Warfare Ships	1–2
Mine Warfare Ships	0–1
Auxiliaries	7–9

WESTERN THEATER¹

Northwestern TVD

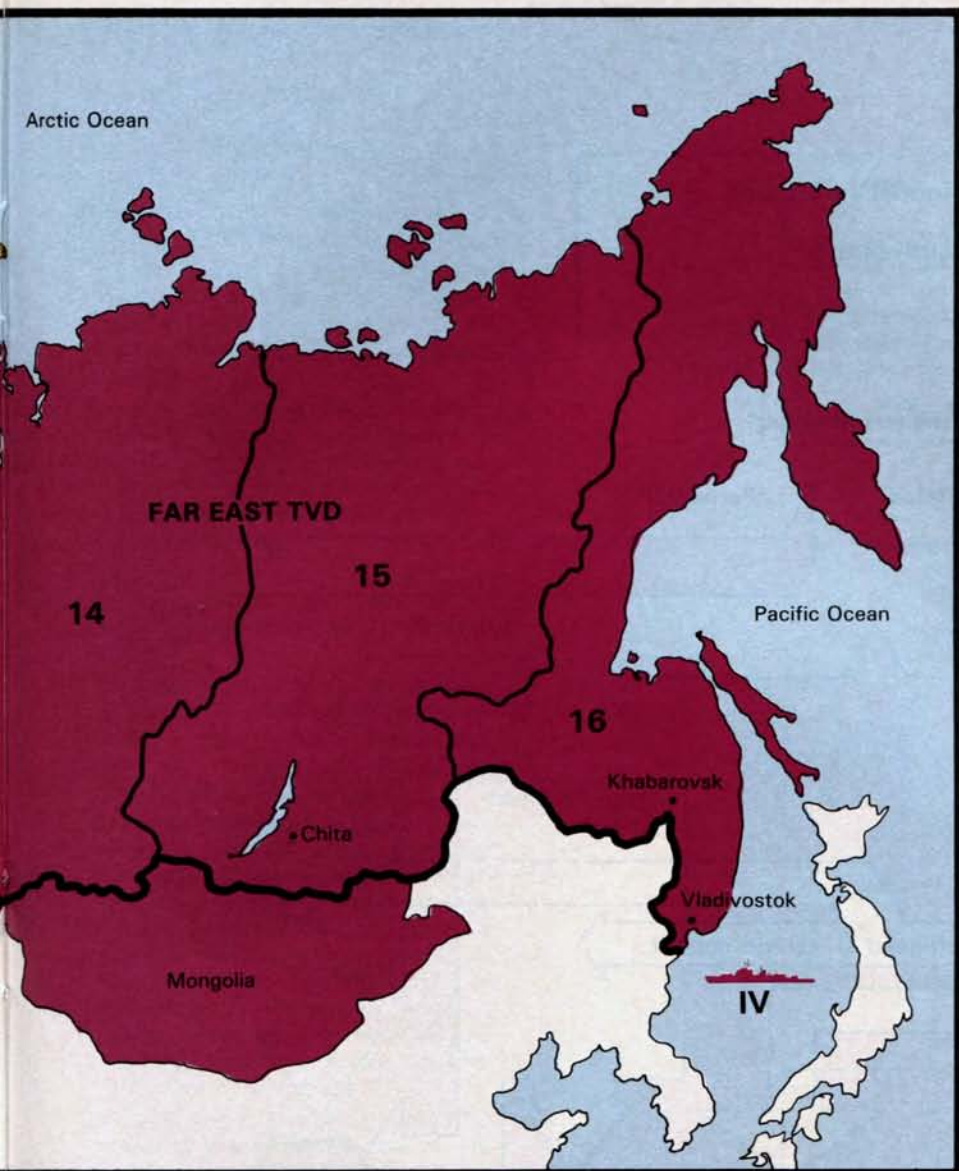
Divisions	11
Tanks ⁴	1,320
Artillery ²	1,940
Tactical Aircraft	225

Southwestern TVD

Divisions	28
Tanks ⁴	7,030
Artillery ²	5,900
Tactical Aircraft	940

Western TVD

Divisions	63
Tanks ⁴	19,395
Artillery ²	15,400
Tactical Aircraft	2,380



MILITARY DISTRICTS

1. Leningrad
2. Baltic
3. Belorussia
4. Moscow
5. Carpathia
6. Odessa
7. Kiev
8. North Caucasus
9. Transcaucasus
10. Volga
11. Ural
12. Turkestan
13. Central Asia
14. Siberia
15. Transbaykal
16. Far East

FLEETS

- I. Northern
- II. Baltic
- III. Black Sea
- IV. Pacific Ocean

¹During wartime, the Western Theater would comprise the Northwestern, Western, and Southwestern Theaters of Military Operations (TVDs).

²This category includes all field artillery, mortars, and multiple rocket launchers 100 mm in size or greater.

³Not including SSBNs.

⁴Medium tanks only.

Atlantic TVD

Baltic Fleet

Principal Surface Combatants	42
Other Combatant Craft	323
Auxiliaries	165
Submarines	45
Naval Aviation	275
Naval Infantry Brigade	1

Black Sea Fleet

Principal Surface Combatants	75
Other Combatant Craft	224
Auxiliaries	148
Submarines	35
Naval Aviation	465
Naval Infantry Brigade	1

Mediterranean Squadron

(most units drawn from Black Sea and Northern Fleets)

Ships, average	35-45
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Submarines	6-7
Cruisers	1-2
Destroyers	2-3
Frigates	2-3
Amphibious Warfare Ships	0-1
Mine Warfare Ships	0-1
Auxiliaries	24-28

Arctic TVD

Northern Fleet

Aircraft Carriers	1
Principal Surface Combatants	75
Other Combatant Craft	138
Auxiliaries	200
Submarines ³	139
Naval Aviation	445
Naval Infantry Brigade	1

SOUTHERN THEATER

Southern TVD

Divisions	30
Tanks ⁴	5,450
Artillery ²	5,810
Tactical Aircraft	915

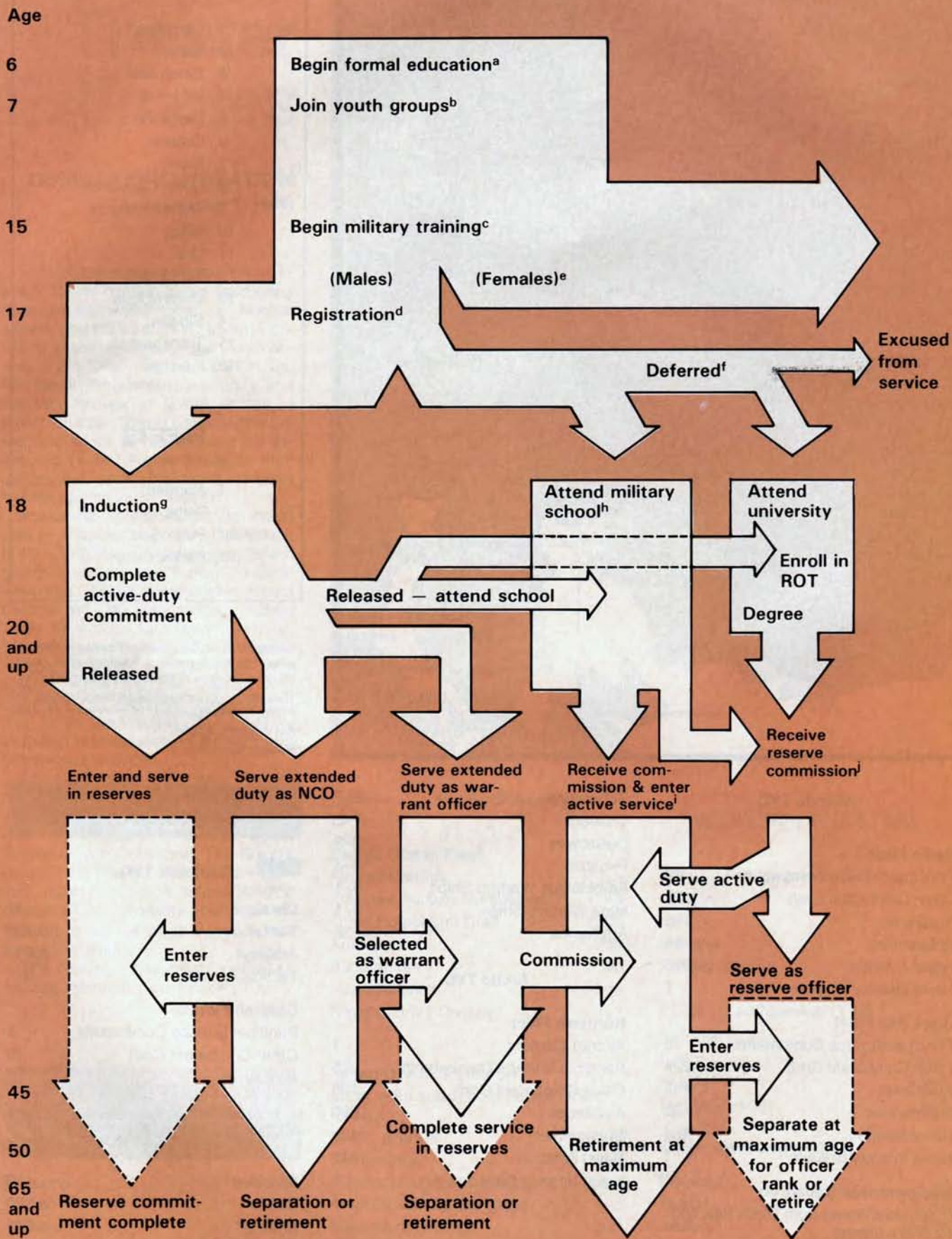
Caspian Flotilla

Principal Surface Combatants	5
Other Combatant Craft	79
Auxiliaries	27

STRATEGIC RESERVES

Divisions	19
Tanks ⁴	4,580
Artillery ²	4,070
Tactical Aircraft	150

THE SOVIET MILITARY EXPERIENCE



Footnotes

- ^a Formal education begins at age 6; eleven years of schooling required.
- ^b Youth groups include Little Octobrists (ages 7-9), Young Pioneers (10-14/15), and Komsomol, the All-Union Communist Union of Youth (14-28).
- ^c At age 15, Soviet teenagers begin military training and receive a minimum of 140 hours before induction. Boys get thirty additional hours during summer camp. First aid is emphasized for girls.
- ^d By age 17, all males must register for military service. They may be assigned to specific training prior to induction.
- ^e Soviet law provides for conscription of women, but in practice this is not done. However, women may volunteer. A very few women are commissioned officers.
- ^f Few deferments from military service are granted; the majority of these allows selected students to attend approved schools to learn skills critically needed by the state or military. Males enroll concurrently in Reserve Officer Training (ROT). In rare instances, males may be deferred for health or family reasons and excused from their active commitment upon reaching age 27.
- ^g Most Soviet males are inducted for enlisted service at the age of 18. Call-ups are held annually in the spring and fall. Conscripts rarely have a choice of service or branch. The usual term of service is two years for the Army and Navy ashore and three years for the Navy afloat.
- ^h Males who qualify by competitive examination and political recommendation may attend one of about 140 higher military schools. These schools are the primary sources of active-duty officers.
- ⁱ The Soviet military does not have an "up-or-out" policy for officers, but does impose maximum ages on active service according to rank. An officer who reaches his maximum age but is not eligible for retirement will be transferred to the reserves.
- ^j The Soviet armed services require a large number of reserve officers. Citizens receiving reserve commissions may spend their entire careers as part-time reservists, or they may be called to a period of active duty, particularly if they possess critical skills.

Soviet Active Military Population

(As of October 1, 1986)

Ground Forces	1,992,000
Air Forces	454,900
Navy	449,100
Strategic Defense Forces	531,200
Strategic Attack (includes Strategic Rocket Forces and strategic elements of the Air Forces and Navy)	410,500
Command/General Support	1,472,300
Security Forces (KGB/MVD)	570,000
Total	5,880,000



Pin honoring Volgograd (Stalingrad), the "hero city" of the "Great Patriotic War"

The Military Oath

Soviet officers and enlisted members take the same oath. The text printed below is the official Soviet translation.

I, citizen of the Union of Soviet Socialist Republics, joining the ranks of the Armed Forces, take the oath and solemnly pledge to be a conscientious, brave, disciplined and vigilant warrior, strictly to observe military and state secrets, to observe the constitution of the USSR and Soviet laws, unquestioningly to carry out the requirements of all military regulations and orders of commanders and superiors.

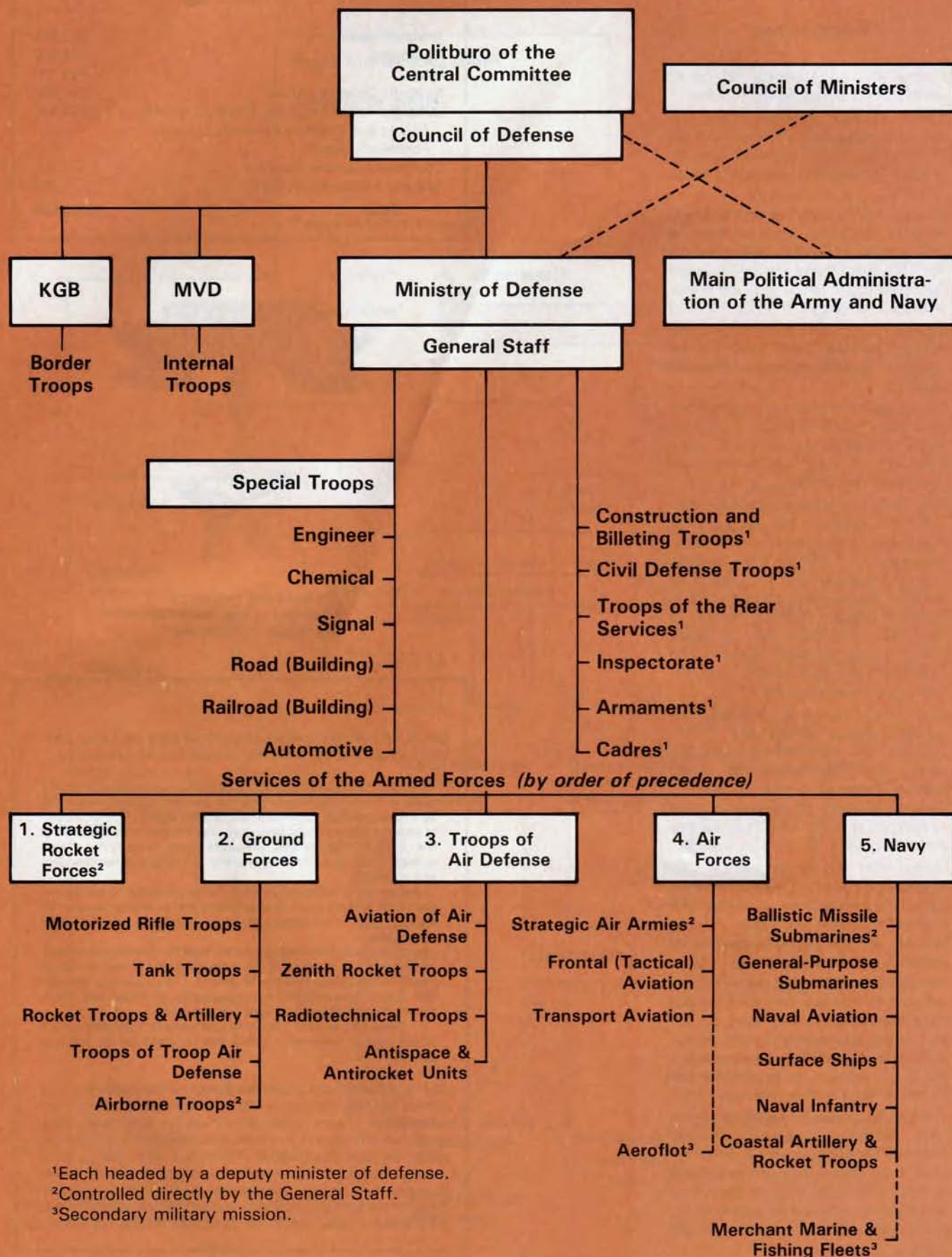
I pledge conscientiously to study military science, to preserve in every way military and public property and to remain devoted till my last breath to my people, my Soviet homeland, and the Soviet government.

I am prepared at all times, on orders from the Soviet government, to come out in defense of my homeland, the Union of Soviet Socialist Republics. I pledge to defend it courageously, skillfully, with dignity and honour, without sparing my blood and life in securing complete victory over the enemies.

If I break this solemn vow, may I be severely punished by the Soviet people, universally hated, and despised by the working people.

Col. G. Kobozev described the Soviet military oath thusly in *Soviet Military Review* in 1983: "If you ask [a Soviet] ex-serviceman or serviceman which was the most memorable day in his life, he will, in most cases, say that it was the day when he took the Oath of Allegiance. And that is quite natural, because it is a solemn pledge of loyalty to his Homeland. As soon as a man takes it, he assumes responsibility for the fate of his country and people, he swears he will defend them to his last breath, to the last drop of his blood."

The Soviet Military Establishment



¹Each headed by a deputy minister of defense.

²Controlled directly by the General Staff.

³Secondary military mission.

Lineup of Soviet Military Power

(As of October 1, 1986)

Strategic Nuclear Missiles

- 1,418—Intercontinental ballistic missiles (ICBM).** SS-11: 440. SS-13: 60. SS-17: 150 (with 600 warheads). SS-18: 308 (with 3,080 warheads). SS-19: 360 (with 2,160 warheads). SS-25: 100. (The total ICBM figure does not include ICBMs held in reserve for flight testing.)
- 999—Submarine-launched ballistic missiles (SLBM).** SS-N-5: 39. SS-N-6: 304. SS-N-8: 292. SS-N-17: 12. SS-N-18: 224. SS-N-20: 80. SS-N-23: 48.
- 553—Intermediate/medium-range ballistic missiles (IRBM/MRBM).** SS-4: 112 (all based west of the Urals). SS-20: 441. (Approximately one-third of the SS-20 launchers are deployed in the Far East.)

Air Defense

- 1,210—Interceptors.** MiG-23 Flogger: 420. MiG-25 Foxbat: 305. Su-15 Flagon: 240. Su-27 Flanker: 5. Tu-28/-128 Fiddler: 80. Yak-28 Firebar: 65. MiG-31 Foxhound: 95.
- 9,000—Strategic surface-to-air missile (SAM) launchers.** SA-1: 2,300. SA-2: 2,675. SA-3: 1,135. SA-5: 2,030. SA-10: 860.
- 4,445—Tactical SAM launchers.** SA-4: 1,350. SA-6: 850. SA-8: 765. SA-9: 500. SA-11: 180. SA-13: 800. The SA-X-12 is still under development.
- 8—Airborne warning and control aircraft.** Tu-126 Moss: 7. Il-76 Mainstay: 1.
- 100—Antiballistic missile launchers.** ABM-1B Galosh. (The ABM system is being upgraded to the maximum total of launchers allowed by the ABM Treaty.)
- 7,000+—Warning systems.** These include early warning and ground control intercept radars and satellites.

Air Forces

- 165—Long-range strategic bombers.** Tu-95 Bear: 150. Mya-4 Bison: 15. Blackjack is still under development.
- 550—Medium-range bombers.** Tu-22M Backfire: 155 (excludes Backfires with Naval Aviation). Tu-16 Badger: 260. Tu-22 Blinder: 135.
- 2,780—Tactical counterair interceptors.** MiG-21 Fishbed: 490. MiG-23 Flogger: 1,570. MiG-25 Foxbat: 105. Su-15 Flagon: 260. Tu-128 Fiddler: 20. Yak-28 Firebar: 20. MiG-29 Fulcrum: 275. MiG-31 Foxhound: 30. Su-27 Flanker: 10.
- 2,835—Ground attack aircraft.** MiG-21 Fishbed: 130. MiG-27 Flogger: 830. Su-7/-17 Fitter: 895. Su-24 Fencer: 770. Su-25 Frogfoot: 210.
- 50—Tanker aircraft.** Mya-4 Bison: 30. Tu-16 Badger: 20.
- 685—Tactical reconnaissance and electronic countermeasures aircraft.** MiG-21 Fishbed: 65. MiG-25 Foxbat: 195. Su-17 Fitter: 165. Su-24 Fencer: 65. Yak-28 Brewer: 195.
- 260—Strategic reconnaissance and ECM aircraft.** Tu-16 Badger: 115. Tu-22 Blinder: 15. Tu-95 Bear: 4. Yak-28 Brewer: 102. MiG-25 Foxbat: 24.
- 3,050—Attack assault helicopters** (including Mi-8 Hip and Mi-24 Hind aircraft).
- 1,500—Training aircraft** (including 800 fixed-wing, of which perhaps 600 are combat capable, and 700 rotary-wing aircraft).
- 575—Military air transports assigned to Transport Aviation (VTA).** An-22 Cock: 55. An-12 Cub: 210. Il-76 Candid: 310.

—Totals for air defense interceptors, strategic bombers, and tactical aircraft include aircraft in operational units only.

- 1,300—Transports in other elements of the armed forces.** An-12 Cub: 300. Others: 1,000.
- 1,635—Civil aviation aircraft (Aeroflot).** An-12 Cub: 160. Il-76 Candid: 50. Other medium- and long-range transports: 1,425.

Ground Forces

- 52,765—Main battle tanks.** T-54/-55: 19,855. T-62: 13,335. T-64: 9,550. T-72: 8,500. T-80: 1,525.
- 1,532—Surface-to-surface missiles.** FROG-3/-5: 130. FROG-7: 550. SS-21 Scarab: 110. SS-1 Scud B: 620. SS-23 Spider: 12. SS-12 Scaleboard: 110 (includes more accurate version deployed in 1984).
- 46,535—Artillery pieces, mortars, and multiple rocket launchers.** Artillery pieces: 29,000. Mortars: 10,760. MRLs: 6,775. (Total does not include more than 2,000 antitank artillery pieces.)
- 59,100—Infantry fighting vehicles and armored personnel carriers.**
- 4,260—Combat and support helicopters.** Mi-2 Hoplite: 675. Mi-4 Hound: 20. Mi-6 Hook: 450. Mi-8 Hip: 1,950. Mi-24 Hind: 1,100. Mi-26 Halo: 50. Mi-10 Harke: 15. Mi-28 Havoc and Hokum are still in development. (Total includes 170 Hip E and 1,050 Hind D and E gunship helicopters.)

Naval Forces

- 78—Ballistic missile submarines.** Delta: 39. Hotel: 1. Yankee: 20. Typhoon: 4. Golf: 14.
- 134—Nuclear-powered general-purpose submarines.** Cruise missile attack: 48. Attack: 72. Other: 14.
- 145—Diesel- and electric-powered general-purpose submarines.** Cruise missile attack: 16. Attack: 125. Training: 4.
- 15—Auxiliary submarines** (includes both nuclear-powered and non-nuclear-powered boats).
- 3—Guided missile V/STOL aircraft carriers** (Kiev class).
- 2—Guided missile aviation cruisers** (Moskva class).
- 37—Cruisers.** Kirov class nuclear-powered guided missile: 2. Sverdlov class light: 8. Guided missile: 27.
- 63—Destroyers** (including 43 guided missile destroyers).
- 179—Frigates and corvettes** (including 32 Krivak class guided missile frigates).
- 975—Small surface ship combatants.** Patrol: 190. Coastal patrol and river/roadstead: 395. Mine warfare: 390.
- 184—Amphibious warfare ships and craft.**
- 780—Auxiliary ships.** Material support: 75. Underway replenishment: 80. Fleet support: 145. Other: 480.

Naval Aviation

- 340—Strike and bomber aircraft.** Tu-22M Backfire: 120. Tu-16 Badger: 190. Tu-22 Blinder: 30.
- 145—Fighter and fighter-bomber aircraft.** Su-17 Fitter: 75. Yak-38 Forger A: 70.
- 70—Tankers** (Tu-16 Badger).
- 200—Reconnaissance and electronic warfare aircraft.** Includes Tu-16 Badgers, Tu-95 Bear Ds, Tu-22 Blinders, An-12 Cubs, and others.
- 480—Antisubmarine aircraft.** Tu-142 Bear F: 60. Mi-14 Haze A: 100. Ka-27 Helix: 60. Ka-25 Hormone A: 115. Be-12 Mail: 95. Il-38 May: 50.
- 465—Transport and training aircraft.**

Alliances and Treaties

Prior to the 1970s, the Soviet Union maintained very few alliances or treaties with other nations. The Warsaw Pact, initiated by the Soviets in 1955 as a response to NATO, remains the only multinational defense alliance to which it is a signatory.

Known bilateral treaties of military significance are listed. Others may exist, but, if so, have been kept secret by the signatories. The USSR also maintains bilateral arrangements with each of the other Warsaw Pact countries.

Multinational Alliances

- Warsaw Pact Organization. Members include Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Romania, and the USSR. Albania was an original signatory, but was excluded from the Pact in 1962. Pact Headquarters is in Moscow; the Pact's Commander in Chief is a Soviet Marshal.

Bilateral Treaties

- Afghanistan: Friendship, Cooperation, and Mutual Assistance (1978).
- Angola: Friendship and Cooperation (1976); Military Cooperation Agreement (1983).

- Congo: Friendship and Cooperation (1981).
- Ethiopia: Friendship and Cooperation (1978).
- Finland: Mutual Assistance (1948).
- India: Friendship, Cooperation, and Mutual Assistance (1971).
- Iran: Provisions of a treaty dating from 1921 between what was then Persia and the USSR were abrogated by Iran in 1979. These provisions permitted Soviet intervention in Iran if a third party should attempt an attack against the USSR from Iranian soil. The Soviets have not recognized this unilateral abrogation.
- Iraq: Friendship, Cooperation, and Mutual Assistance (1972, 1978).
- Mongolia: alliance (1921); defense treaty (1966).
- Mozambique: Friendship and Cooperation (1977).
- North Korea: Friendship, Cooperation, and Mutual Assistance (1961).
- North Yemen: Friendship (1984).
- South Yemen: Friendship, Cooperation, and Mutual Assistance (1980); Agreement of Joint Cooperation (1983).
- Syria: Friendship, Cooperation, and Mutual Assistance (1980).
- Turkey: Nonaggression Pact (1978).
- Vietnam: Friendship, Cooperation, and Mutual Assistance (1978).



Pin commemorating the fortieth anniversary of the end of the "Great Patriotic War"

Significant Military Deployments Outside the Soviet Union

(As of October 1, 1986)

EUROPE

Warsaw Pact Countries 715,000

ASIA

Afghanistan^{1,4} 118,000
 Mongolia 65,000
 Vietnam² 2,500
 Laos 500
 India 200
 Kampuchea 200

MIDEAST

Syria 2,500
 South Yemen⁴ 1,000
 Iraq⁴ 800
 North Yemen 500

AFRICA³

Ethiopia⁴ 1,500
 Libya⁴ 1,400
 Angola⁴ 1,000
 Algeria 700
 Mozambique⁴ 500
 Congo⁴ 100
 Mali 50

LATIN AMERICA

Cuba⁵ 3,000
 Peru 100
 Nicaragua⁴ 50

¹Total includes an estimated 10,000 MVD and KGB forces.

²Estimate does not include transient Soviet naval presence.

³About 900 additional Soviet military advisors are deployed in smaller numbers to many other African nations.

⁴Significant Cuban military forces are also deployed to this country.

⁵Does not include an estimated 2,800 Soviet technicians in Cuba.

Comparison of Key Military Technologies

As of September 30, 1986

Basic Technologies

Aerodynamics/Fluid Dynamics		
Computers and Software	▲	
Conventional Warheads (including all chemical explosives)	▼	
Directed Energy (lasers)		
Electro-Optical Sensors (including IR)		
Guidance and Navigation	▼	
Life Sciences (human factors/biotechnology)	▼	
Materials (lightweight, high strength, high temperature)	▼	
Microelectronic Materials and Integrated Circuit Manufacture		
Nuclear Warheads	▼	
Optics	▼	
Mobile Power Sources (including automated control)		
Production/Manufacturing (including automated control)	▼	
Propulsion (aerospace and ground vehicles)	▼	
Radar Sensors	▼	
Robotics and Machine Intelligence		
Signal Processing		
Signature Reduction		
Submarine Detection		
Telecommunications (including fiber optics)		
US Superior		
US-USSR Equal		
USSR Superior		

Indicates US lead is diminishing ▼

Indicates US lead is increasing ▲

Soviet Aircraft Designations

The several parts of a Soviet aircraft designation have distinct meanings. Take the designation "MiG-21MF Fishbed J" as an example.

MiG is an abbreviation of the design bureau responsible for the aircraft—Mikoyan and Gurevich (the bureau's originators) in this case. Other examples are Su for Sukhoi (or Sukhoy), Tu for Tupolev, and Yak for Yakovlev.

The numeral 21 is the model number of the production aircraft. Odd numerals are assigned to fighters, even numerals to bombers and transports.

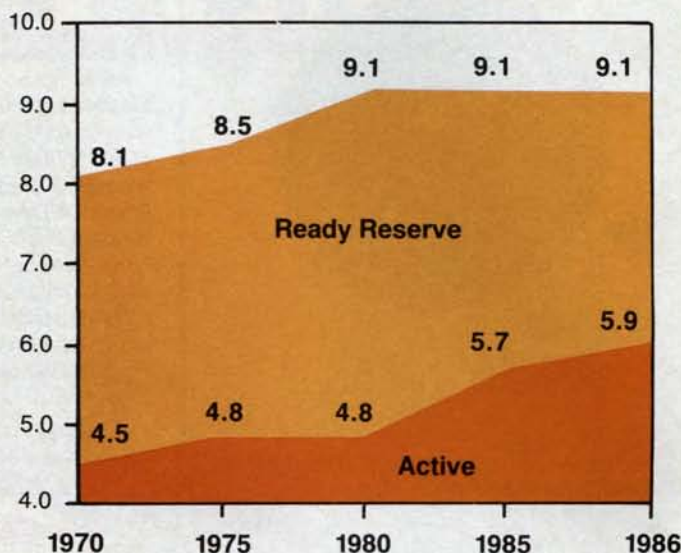
The letter arrangement MF is the progressive development suffix. M stands for modified or modified for export, F for boosted. Other examples are A for aerodynamic refinement, B for attack or bomber version, bis for a reinitialized suffix, P for interceptor version, S for boundary layer blowing, and U or Uti for trainer.

Fishbed is the identifying code name assigned to this MiG series by NATO. All important Soviet aircraft are named as they are identified by photographs from a man-operated camera. The first letter of the name identifies the aircraft type—F for fighter, B for bomber, C for cargo or transport, H for helicopter, and M for miscellaneous. A code name of one syllable means the aircraft is propeller-powered; a code name of two syllables means it is jet-powered.

The letter following the name—J in this example—indicates the point in the letter sequence at which this version was identified by NATO.

Trends in Soviet Military Force Levels

(in millions)



Soviet Aeronautical Milestones

1884—First "hop" by a steam-engine-powered monoplane designed by Alexander Fedorovich Mozhaiski. Short distance and incline-assisted takeoff prevent it from being considered true powered flight.

1904—Nikolai Zhukovsky, "Father of Soviet Aviation," founds Europe's first institute of aerodynamics.

1910—Russian Imperial War Ministry establishes flying school at Gatchina.

1913—(May 13) First flight of the world's first four-engine airplane—*The Russian Knight*, affectionately called *Le Grand*. Designed by Igor Sikorsky.

1913—(August 20) Staff Capt. Peter Nesterov performs history's first inside loop in a Nieuport IV.

1914—(August 26) First air battle of World War I on the Eastern Front. First recorded aerial ramming in combat by Staff Captain Nesterov.

1921—The ANT-1 flies, the first of a record number of more than 100 aircraft designed by Andrei N. Tupolev.

1922—The Germans begin construction of a modern aircraft plant at Fili (near Moscow) under the provisions of the Treaty of Rapallo.

1930—The I-5 flies, the first Soviet-designed and -built fighter.

1934—(May 19) First flight of the ANT-20 *Maxim Gorki*, at the time the world's largest aircraft. Designed by Tupolev.

1937—The Soviets set several record endurance flights, including the first polar flight between Europe and North America.

1946—(April 24) First flight of Soviet-designed and -built jet fighter prototypes—the Yak-15 and the MiG-9.

1947—(December 30) First flight of the MiG-15.

1956—The Tu-104 makes its debut as the world's first commercial jetliner.

1968—(December 31) First flight of the Tu-144, the world's first supersonic transport.

Recipients of Soviet Military Exports

(Ranked by value of Soviet military equipment received, 1985-86)

1. Iraq
2. India
3. Libya
4. Angola
5. Vietnam
6. Poland
7. Syria
8. Cuba
9. Jordan
10. Czechoslovakia

Top Soviet Military Aircraft Exports

(1985-86)

Aircraft Type	NATO Code Name	Primary Role	Number Exported
Su-7/-17/-22	Fitter	Ground attack	170
MiG-23/-27	Flogger	Interceptor/ground attack	115
MiG-21	Fishbed	Multirole fighter	70
An-32	Cline	Short/medium-range transport	50
Su-25	Frogfoot	Ground attack	50
MiG-21U	Mongol	Miscellaneous/trainer	40
MiG-29	Fulcrum	Interceptor	40
An-26	Curl	Short-range transport	10



Pin commemorating Luna 17, first robot vehicle on the moon

Soviet Space Shots by Program

(1957-1986)

Photo Reconnaissance	712
Communications	268
Electronic Intelligence (ELINT)	157
Related to Manned Spaceflight (Manned: 59; Unmanned: 90)	149
Minor Military (Radar calibration, etc.)	144
Navigation/Geodetic	131
Scientific/Developmental (including rocket tests)	104
Weather/Natural Resources	74
Early Warning	53
Venus or Mars Missions	40
ASAT-Related	38
Lunar Missions	30
Fractional Orbital Bombardment System (FOBS)	18
Unknown	4
Total	1,922

—Courtesy Teledyne Brown Engineering

Soviet Space Launches to Orbit or Beyond

(As of December 31, 1986)

1957	2
1958	1
1959	3
1960	3
1961	6
1962	20
1963	17
1964	30
1965	48
1966	44
1967	66
1968	74
1969	70
1970	81
1971	83
1972	74
1973	86
1974	81
1975	89
1976	99
1977	98
1978	88
1979	87
1980	89
1981	98
1982	101
1983	98
1984	97
1985	98
1986	91

—Courtesy Teledyne Brown Engineering

Soviet Space Firsts

October 1957	Sputnik 1	First artificial earth satellite
November 1957	Sputnik 2	First satellite to collect biological data
September 1959	Luna 2	First lunar probe to hit the moon
October 1959	Luna 3	First photographs of the moon's far side
April 1961	Vostok 1	First manned orbital flight (Cosmonaut Yuri Gagarin)
June 1963	Vostok 6	First woman in space (Cosmonaut Valentina Tereshkova)
October 1964	Voshkod 1	First multiple crew member spaceflight (Cosmonauts Komarov, Yegorov, Feoktistov)
March 1965	Voshkod 2	First space walk (Cosmonaut Alexei Leonov)
January 1966	Luna 9	First soft landing of a probe on the moon
April 1966	Luna 10	First artificial satellite of moon
October 1967	Kosmos 186/188	First automatic docking of satellites
November 1968	Kosmos 252	First successful ASAT test
January 1969	Soyuz 4/5	First linkup of manned vehicles and in-orbit crew exchange
October 1969	Soyuz 6/7/8	First triple launch and rendezvous of manned ships
November 1970	Luna 17	First robot vehicle on the moon
April 1971	Salyut 1	First launch of a prototype manned space station
June 1975	Venera 9	First pictures of surface of Venus
July 1975	Apollo/Soyuz Test Project	First international rendezvous and docking in space
January 1978	Soyuz 27	First manned double docking in space
October 1984	Soyuz T 10/11	Record of 237 days living in space
March 1986	Vega 1	First close rendezvous with a comet
May 1986	Soyuz T 15	First transfer between operational space stations